SEEDBED PREPARATION

TECHNICAL GUIDANCE DOCUMENT

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INTRODUCTION

The purpose of seedbed preparation is to create suitable conditions for seedling emergence and growth. Techniques differ depending on previous vegetation, hydrology conditions, vegetation being planted (forbs, grasses, sedges, etc.), the type of seeder to be used, and the time of year that seeding will be conducted. In most cases, fields that were in agricultural production (corn or soybeans) prior to seeding will not need much additional seedbed preparation other than baling of stalks after harvesting of corn and loosening the soil surface prior to broadcast seeding (if the surface is crusted). An advantage of minimizing additional soil disturbance is that soil structure is kept intact, soil microbes populations are not decreased, and weed germination is minimized.

Harrowing of seedbed prior to upland seeding

APPLICATION

Sites where perennial vegetation was removed through combinations of herbicide application and tilling (rough-disked or cultivated) may require additional seedbed preparation to smooth the seed bed prior to drill or broadcast seeding. Double disks or field cultivators are used to break the soil into smaller chunks. Harrows are then used to further break up soil clods and smooth the surface. Vicon type seeders that broadcast seed, or Brillion or Trillion seeders that broadcast and then pack seed are used after harrowing, but further packing is needed for other types of seed drills. When

Site Preparation Requirements for Seeding Equipment	
Vicon broadcast seeder	Rough but settled soil surface to smooth/firm seedbed
No-till drill	sod cover treated with herbicide, clipped cover crops (such as oats or winter wheat) or corn fields where stalks have been baled
Brillion or Trillion Seeder	smooth/firm seedbed, or clipped cover crops (such as oats or winter wheat)
Traditional native seed drill	smooth/firm seedbed (including fields previously in soybeans)

preparing for drill seeding, footprints should not leave an indentation of more than one-half inch deep. Soil can be firmed with a cultipacker or roller to prevent seed from being buried too deep. Sometimes rainfall alone can accomplish this final packing.

Seeding should be conducted as soon after seedbed preparation as possible, particularly for broadcast seeding where a relatively loose seedbed is necessary for seed establishment and optimal growing conditions. Seeding shortly after seedbed preparation will also give native vegetation a competitive advantage against weeds. An exception to seeding shortly after seedbed preparation is when winter seeding will be conducted. With winter seeding weeds will be dormant after preparing the seedbed in later fall and planting can occur later in late winter or early spring.

Example Seedbed Preparation Schedule for Seed Drills	
Early-May	Rough disking of site
Early-May	Cultivate with double discs or field cultivators to break soil into smaller chunks (two to three passes at right angles)
Early-May	Harrow to even out irregularities
Mid-May	Cultipack or roll.
Note: Timing and techniques may vary depending on weather and site conditions. If field was in wheat, the site should be disked twice the previous season after harvest to decrease allelopathic effect, followed by spring site preparation.	

OTHER CONSIDERATIONS

Seedbed preparation follows other site preparation strategies. If site preparation and seedbed preparation are done well, the chances for successful vegetation establishment will increase. It is important that soil is stabilized during the final grading and seedbed preparation stages of a project. This may involve the use of erosion control fabrics for steep slopes and the use of temporary cover crops to stabilize soil. In addition to stabilizing soils, temporary cover crops can also allow time for additional weed control.

COSTS

The costs for seedbed preparation are typically between $10 and $30 per acre for most treatments such as disking, cultivating, cultipacking, and rolling.

ADDITIONAL REFERENCES

Going Native, A prairie restoration handbook for Minnesota Landowners, Fuge.

Harvesting, Propagating, and Planting Wetland Plants, Hoag, C.J.

Native Vegetation in Restored and Created Wetlands, Its Establishment and Management in Minnesota and the Upper Midwest, Shaw, D.B.

Revegetation Practices in a Seasonal Wetland Restoration in Minnesota, Bohnen, J.L., Galatowitsch, S.M.